

## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	<b>: EW1511182</b>	<b>Page</b>	: 1 of 4
<b>Client</b>	<b>: WINGECARRIBEE SHIRE COUNCIL</b>	<b>Laboratory</b>	: Environmental Division NSW South Coast
<b>Contact</b>	: MR Scott McAllan	<b>Contact</b>	: Glenn Davies
<b>Address</b>	: PO BOX 141 MOSSVALE NSW AUSTRALIA	<b>Address</b>	: 99 Kenny Street, Wollongong 2500 Unit 4 / 13 Geary Place, PO Box 3105, North Nowra 2541 AUSTRALIA
<b>E-mail</b>	: scott.mcallan@wsc.nsw.gov.au	<b>E-mail</b>	: glenn.davies@alsglobal.com
<b>Telephone</b>	: ----	<b>Telephone</b>	: 02 42253125
<b>Facsimile</b>	: ----	<b>Facsimile</b>	: W 02 42253128 N 02 44232083
<b>Project</b>	: RRC Quarterly	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Order number</b>	: ----	<b>Date Samples Received</b>	: 05-Aug-2015 16:00
<b>C-O-C number</b>	: ----	<b>Date Analysis Commenced</b>	: 05-Aug-2015
<b>Sampler</b>	: Craig Wilson	<b>Issue Date</b>	: 12-Aug-2015 13:39
<b>Site</b>	: ----		
<b>Quote number</b>	: ----	<b>No. of samples received</b>	: 6
		<b>No. of samples analysed</b>	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong
Shobhna Chandra	Metals Coordinator	Sydney Inorganics



## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
∅ = ALS is not NATA accredited for these tests.

- EP002 : NPOC analysis was carried out for sample ID EPA 2 due to high inorganic carbon content.
- Ionic Balance out of acceptable limits due to analytes not quantified in this report.
- Sampling and sample data supplied by ALS Wollongong.
- Sampling completed as per FWI-EN001 Groundwater Sampling.
- Sampling completed as per FWI-EN002 Surface Water Sampling.
- Field tests completed on day of sampling/receipt.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	EPA 1	EPA 2	EPA 3	EPA 5	EPA 6
Client sampling date / time				05-Aug-2015 11:15	05-Aug-2015 11:00	05-Aug-2015 10:35	05-Aug-2015 11:05	05-Aug-2015 10:50	
Compound	CAS Number	LOR	Unit	EW1511182-001	EW1511182-002	EW1511182-003	EW1511182-004	EW1511182-005	
				Result	Result	Result	Result	Result	
<b>EA005FD: Field pH</b>									
pH	----	0.1	pH Unit	4.4	4.4	4.8	7.4	7.9	
<b>EA010FD: Field Conductivity</b>									
Electrical Conductivity (Non Compensated)	----	1	µS/cm	3370	602	3610	2760	1020	
<b>EA015: Total Dissolved Solids</b>									
^ Total Dissolved Solids @180°C	----	10	mg/L	2550	325	1890	1280	610	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	2	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	2	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	199	<1	<1	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	397	135	829	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	170	<1	13	----	----	
Magnesium	7439-95-4	1	mg/L	84	10	58	----	----	
Sodium	7440-23-5	1	mg/L	345	94	610	----	----	
Potassium	7440-09-7	1	mg/L	33	<1	1	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.47	0.14	0.04	49.4	3.74	
<b>EN055: Ionic Balance</b>									
^ Total Anions	----	0.01	meq/L	15.3	3.81	23.4	----	----	
^ Total Cations	----	0.01	meq/L	31.2	4.91	32.0	----	----	
^ Ionic Balance	----	0.01	%	34.1	12.6	15.4	----	----	
<b>EP005: Total Organic Carbon (TOC)</b>									
Total Organic Carbon	----	1	mg/L	27	----	4	35	27	
Nonpurgeable Organic Carbon	----	1	mg/L	----	3	----	----	----	
<b>EP030: Biochemical Oxygen Demand (BOD)</b>									
Biochemical Oxygen Demand	----	2	mg/L	----	----	----	6	5	
<b>FWI-EN/001: Groundwater Sampling - Depth</b>									
Depth	----	0.01	m	2.96	2.25	1.94	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		EPA 7	----	----	----	----
Client sampling date / time		05-Aug-2015 10:10		----	----	----	----	----
Compound	CAS Number	LOR	Unit	EW1511182-006	-----	-----	-----	-----
				Result	Result	Result	Result	Result
<b>EA005FD: Field pH</b>								
pH	----	0.1	pH Unit	8.2	----	----	----	----
<b>EA010FD: Field Conductivity</b>								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	2160	----	----	----	----
<b>EA015: Total Dissolved Solids</b>								
^ Total Dissolved Solids @180°C	----	10	mg/L	1040	----	----	----	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	5.59	----	----	----	----
<b>EN055: Ionic Balance</b>								
^ Total Anions	----	0.01	meq/L	----	----	----	----	----
^ Total Cations	----	0.01	meq/L	----	----	----	----	----
^ Ionic Balance	----	0.01	%	----	----	----	----	----
<b>EP005: Total Organic Carbon (TOC)</b>								
Total Organic Carbon	----	1	mg/L	40	----	----	----	----
Nonpurgeable Organic Carbon	----	1	mg/L	----	----	----	----	----
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	----	2	mg/L	<2	----	----	----	----
<b>FWI-EN/001: Groundwater Sampling - Depth</b>								
Depth	----	0.01	m	----	----	----	----	----